

Having described the invention, the following is claimed:

1. Apparatus for helping to protect an occupant of a vehicle that has a roof, a windshield, and an instrument panel, said apparatus comprising:

an inflatable windshield curtain inflatable away from the roof to a position between the windshield and a vehicle occupant, said windshield curtain including an inflatable upper portion and an inflatable lower portion, said upper portion being inflatable between the roof and the instrument panel and between the windshield and a vehicle occupant, said lower portion being bifurcated and having a first chamber inflatable against a surface of the instrument panel presented generally toward the vehicle occupant, said lower portion having a second chamber inflatable against the windshield and a surface of the instrument panel adjacent the windshield.

2. The apparatus recited in claim 1, wherein said inflatable vehicle occupant protection device is free from tethers for helping to define said first and second chambers.

3. The apparatus recited in claim 1, wherein the surface of the instrument panel facing the vehicle occupant extends at an angle to the upper surface of the instrument panel.

4. The apparatus recited in claim 1, wherein said windshield curtain further comprises a pleated portion, said pleated portion being unfoldable to allow expansion of said pleated portion upon inflation of said windshield curtain.

5. The apparatus recited in claim 1, wherein said windshield curtain when inflated in a vehicle provides an inflated protection wall extending from a roof of the vehicle down to a position against the surface of an instrument panel of the vehicle facing a vehicle occupant and below the upper surface of the instrument panel.

6. The apparatus recited in claim 5, wherein said windshield curtain when inflated extends from a passenger side A pillar to about a longitudinal centerline of the vehicle.

7. The apparatus recited in claim 5, wherein said windshield curtain when inflated extends from a driver side A pillar to about a longitudinal centerline of the vehicle.

8. The apparatus recited in claim 5, wherein said windshield curtain when inflated extends from a driver side A pillar to a passenger side A pillar.

9. The apparatus recited in claim 8, wherein said first and second chambers are included in a passenger side portion only of the windshield curtain.

10. The apparatus recited in claim 1, further comprising an inflation fluid source actuatable to provide inflation fluid for inflating said windshield curtain.

11. An inflatable vehicle occupant protection device comprising:

a first panel of material including an upper portion and a lower portion, said lower portion of said first panel being folded over onto itself, overlying folded over portions of said lower portion of said

first panel being interconnected along first and second side edges of said first panel; and

a second panel of material including an upper portion and a lower portion, said lower portion of said second panel being folded over onto itself, overlying folded over portions of said lower portion of said second panel being interconnected along first and second side edges of said second panel;

said first and second panels being positioned overlying each other, overlying upper portions of said first and second panels being interconnected along their respective first and second side edges.

12. The inflatable vehicle occupant protection device recited in claim 11, wherein said first and second panels each include upper and lower edges extending between their respective first and second side edges, said upper edges of said first and second panels being interconnected with each other, said lower edges of said first and second panels being interconnected with each other.

13. The inflatable vehicle occupant protection device recited in claim 12, wherein said overlying

first and second panels help define an inflatable volume of said inflatable vehicle occupant protection device, said inflatable volume comprising:

an inflatable upper portion defined between said interconnected upper portions of said first and second panels;

an inflatable first chamber defined by said interconnected folded over portions of said lower portion of said first panel; and

an inflatable second chamber defined by said interconnected folded over portions of said lower portion of said second panel.

14. The inflatable vehicle occupant protection device recited in claim 13, wherein said upper portion is inflatable between a vehicle roof and an instrument panel of the vehicle and also between a windshield of the vehicle and a vehicle occupant;

said first chamber being inflatable away from said upper portion and away from said first lower portion against a surface of the instrument panel facing the vehicle occupant;

said second chamber being inflatable away from said upper portion toward the windshield against an upper surface of the instrument panel.

15. The inflatable vehicle occupant protection device recited in claim 13, wherein said inflatable vehicle occupant protection device is free from tethers for interconnecting said panels to help define said first and second chambers.

16. The inflatable vehicle occupant protection device recited in claim 11, wherein said first and second lower portions of said overlying first and second panels are folded along fold lines extending across a width of said first and second panels.

17. The inflatable vehicle occupant protection device recited in claim 11, wherein said inflatable vehicle occupant protection device comprises a single piece of material folded over to define said first and second panels.

18. The inflatable vehicle occupant protection device recited in claim 11, wherein said inflatable

vehicle occupant protection device further comprises a pleated portion, said pleated portion being unfoldable to allow expansion of said pleated portion upon inflation of said inflatable vehicle occupant protection device.

19. The inflatable vehicle occupant protection device recited in claim 18, wherein said pleated portion comprises portions of at least one of said first and second panels folded over to form at least one pleat, said inflatable vehicle occupant protection device including connections that interconnect overlying folded portions of said at least one pleat.

20. The inflatable vehicle occupant protection device recited in claim 11, wherein said inflatable vehicle occupant protection device when inflated in a vehicle provides an inflated protection wall extending from a roof of the vehicle down to a position against a surface of an instrument panel of the vehicle facing a vehicle occupant and below an upper surface of the instrument panel.

21. The inflatable vehicle occupant protection device recited in claim 20, wherein said inflatable vehicle occupant protection device when inflated extends from a passenger side A pillar to about a longitudinal centerline of the vehicle.

22. The inflatable vehicle occupant protection device recited in claim 20, wherein said inflatable vehicle occupant protection device when inflated extends from a driver side A pillar to about a longitudinal centerline of the vehicle.

23. The inflatable vehicle occupant protection device recited in claim 20, wherein said inflatable vehicle occupant protection device when inflated extends from a driver side A pillar to a passenger side A pillar.

24. The inflatable vehicle occupant protection device recited in claim 23, wherein said first and second chambers are included in a passenger side portion only of said inflatable vehicle occupant protection device.



25. The inflatable vehicle occupant protection device recited in claim 11, further comprising an inflation fluid source actuatable to provide inflation fluid for inflating said inflatable vehicle occupant protection device.

26. An inflatable windshield curtain comprising:

a first panel of material including first and second side edges, said first panel having a portion folded over onto itself;

a second panel of material including first and second side edges, said second panel having a portion folded over onto itself;

first connections interconnecting overlying folded over portions of said first panel along said first and second side edges of said first panel;

second connections interconnecting overlying folded over portions of said second panel along said first and second side edges of said second panel; and

third connections interconnecting overlying portions of said first and second panels separate from said folded over portions of said first and second panels, said third connections extending along overlying first side edges of said first and second

panels and along overlying second side edges of said first and second panels;

said first, second, and said third connections along said first side edges of said first and second panels converging at a first location on the windshield curtain;

said first, second, and said third connections along said second side edges of said first and second panels converging at a second location on the windshield curtain.